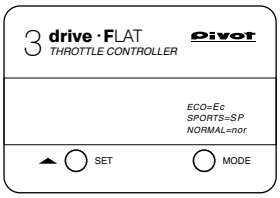
Throttle Controller *3-drive·FLAT*

USER'S MANUAL (Product Number : THF2)

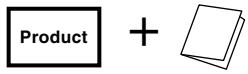
THF2

(Minor changes from May, 2013)



Thank you for purchasing PIVOT product.
Please read this manual carefully and keep it for future reference.

●If this product is given to another user, make sure to include this User's Manual.



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After installation, make sure to carry out "Initial Settings".

After having installed this product, make sure to make settings for your car' s special characteristics by carrying out the "Initial Settings" on Page 5. If the "Initial Settings" are not carried out, a **Check Engine Light** may go on. Also, the unit will remain in **NORMAL Mode** even if the Mode is switched.

Worried about Installation?

If you are worried about carrying out wiring or other installation procedures please consult your dealer.

Only use 3-drive Specialized Harness.

Using another type of harness will cause troubles and failure; use only the 3-drive specialized harness.

Only use with Manufacturer's Original ECU.

Do not install this product if the ECU is not the original one or when a sub-ECU is being used.

Set to NORMAL Mode upon Removal of Product.

When uninstalling the product, make sure to return it to nor (NORMAL) Mode before carrying out any work. Reconnecting this product in a different mode may cause the Check Engine Light to come on.

Modifying this Product is Forbidden.

Under no circumstances should modifications or changes be made to this product. Doing so may cause damage not only to the product, but to the car and the operation of the car in which it is installed.

⚠ WARNING

Improper use or disregard of these warnings may result in the injury or death of people.

- ●When making initial settings make sure to stop the engine and place in Parking or Neutral. It is dangerous to carry out these settings while the engine is running.
- ●Do not work in areas where there is excessive exhaust. Due to vehicle exhaust emission poisoning or fire may result in a damage to humans.
- ●Do not crush the cable. Please be careful that the cable does not get crushed by the seat rail or car door steel plate, nor cut by any sharp steel plate as this may cause a poor connection or an electric short leading to fire or other danger.
- ●While driving DO NOT operate switches or pay prolonged attention to the display; it is extremely dangerous.
- ●Make sure that all wiring and fastening down of the product does not interfere with driving nor be done in such a way as to cause poor connections.

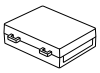
⚠ CAUTION

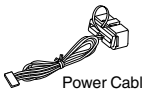
Improper use or disregard of these warnings may cause injury to persons, damage the product and/or other things.

- ●PIVOT Corporation accepts no responsibility, in any manner whatsoever, for damage and/or trouble to your vehicle or product, nor for any accidents that are the result of the misuse of this product.
- ●Please confirm that the type of vehicle you wish to install into is listed in the "List of Specialized Harnesses by Car Model for THF2" .
- ●When installing this product, we recommend that if technical knowledge becomes necessary please consult a qualified mechanic.
- ●If the device is improperly installed or settings have been improperly made a Check Engine Light may go on.
- ●Do not use electrotap.
- ●Wiring should be carried out using the attached "cut connector" or by soldering, make sure to securely insulate all wiring parts with insulation tape, and confirm that no wires are sticking out.
- ●Please wipe with a soft dry cloth (a lens cloth).
- ●Please do not use alcohol or benzine.
  This may cause damage to the painted surface or cracks in the plastic.
- ●Do not, in any manner, process, take apart, or make changes to this product.

Please check the contents of the package

Controller
[50×34×14(D)mm]


Unit
[50×22×70(D)mm]


Power Cable with OBD Connector

Double-sided Tape
[25×35mm] ×2

Cut Connectors
×3

Zip Ties
(Large) ×2, (Small) ×1

User's Manual
(This Book)

Tools and Materials to prepare for Installation

Screwdriver

Nippers

Crimpers

Insulating Tapes

and others

Features

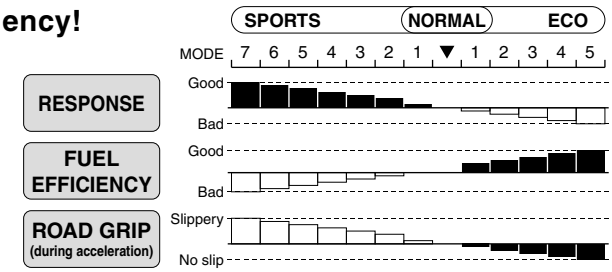
SPORTS & ECO

Control Acceleration and Fuel Efficiency!

SPORTS Mode is for higher response driving.
ECO mode is for better fuel efficiency, more comfort or when on slippery roads.

Select the kind of response to match your driving.

3-drive enables changing the response for electronic throttle car models and gives you, the driver, the freedom to select the type of acceleration response you need or desire: quick acceleration for speedy driving to slower acceleration for eco-driving.



※ Even in ECO mode, if rapid acceleration is carried out over and over again fuel efficiency will not increase.

Performance

FLAT CONTROLLER	The simple 14mm-thin case design allows for unobtrusive installation even in prominent places.
SPORTS MODE	High response for sporty situations. (ideal for circuit, mountain driving, etc...)
ECO MODE	Low response for eco-driving situations. (perfect for city and fuel conscious driving)
NORMAL MODE	Normal performance.
3 MODES 12 STEPS	One-touch selection between 3 modes and 12 steps. (SPORTS Mode = 7 steps ECO Mode = 5 steps)
ACCELERATION MONITOR	Displays the amount of pressure on the accelerator and helps to prevent poor fuel efficiency due to over acceleration.

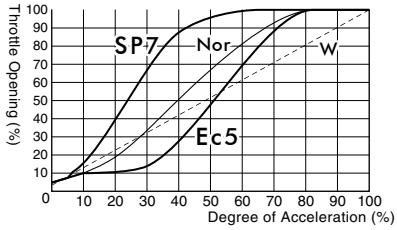
MODE MEMORY	The mode when you start the engine is selectable; the "Same as last" mode or "Normal" mode.
EASY INSTALLATION	Easy installation using car model specific coupling harness. (sold separately)
INITIAL SETTINGS MODE	Stable balanced control is possible by running the "Initial Settings" program after having finished installation; this will help reduce troubles caused by voltage differences found in each car model.

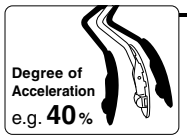
Safety

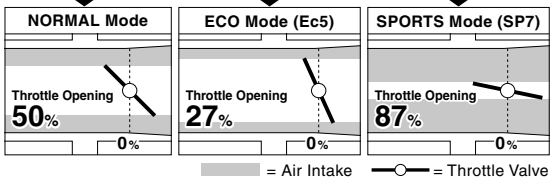
1. Prevents sudden starts by reverting to same response as under normal setting.
2. Normal Control when in Reverse. (wiring where necessary)
3. Returns to Normal in case of faulty wiring or circuitry. ※1
4. Discrete 2 Signal Control for Safety.

※1 When using the OBD connector for running tests, disconnecting the connector will not cause any harm to the car.

Examples of Throttle Opening







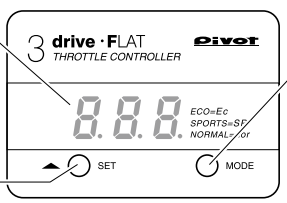
SP7= MAX. SPORTS Mode (7 steps) W= For models with wire-type throttle
Ec5= MAX. ECO Mode (5 steps) Nor= Standard Performance
・SUZUKI SWIFT (ZC31S)

※Fine tune control with 7 steps for Sports Mode and 5 for ECO Mode.
※In some car models with a Valvematic engine, control is carried out by the intake valve rather than the throttle valve.

Part Names

1 Display
- Mode Display
- Degree of Acceleration Display (15 - 100%)
- Display Each Settings

2 SET Switch
- For Adjusting the Change Ratio for each Mode
- Initial Settings



3 MODE Switch
- Switching Modes
- Setting for when Restarting the Engine

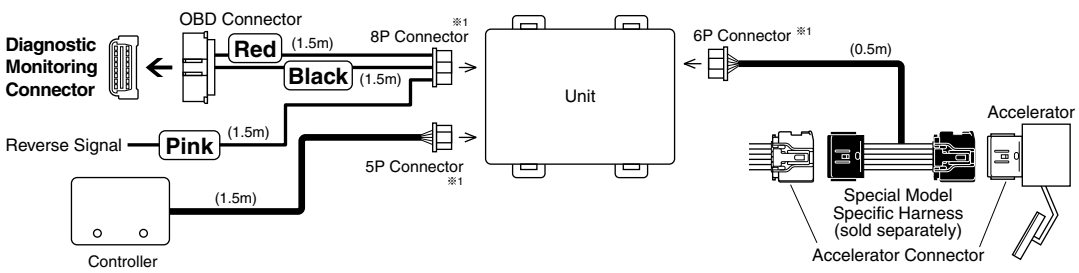
Turning off the Display

※This product is interlocked with the ECU (engine computer) power. Depending on the model of car, the display may remain on for up to 15 minutes even after the engine has been turned off; this is normal.

procedure 1 Connecting The Wires

Basic Wiring

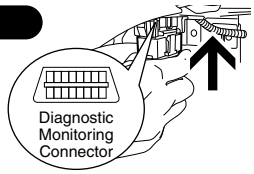
When installing make sure to use the correct Specialized Harness for your car model.



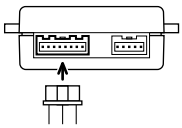
※1 After inserting the connector, pull lightly to make sure that it is securely locked.

Power Cable

OBD Connector — **Connect to the Diagnostic Monitoring Connector.**

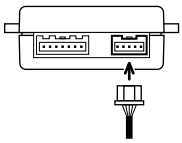


8P Connector — **Connect to the side of the unit.**



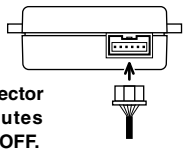
Controller

5P Connector — **Connect to the side of the unit.**



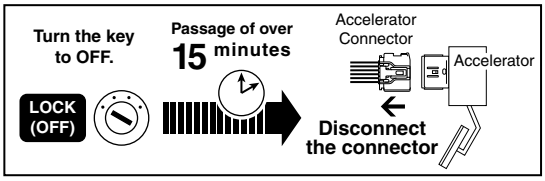
Special Model Specific Harness (sold separately)

6P Connector — **Connect to the side of the unit.**



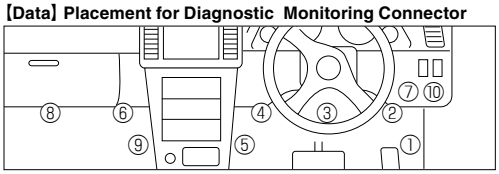
⚠ Only disconnect the accelerator connector after having waited at least 15 minutes from the time that the key was turned OFF.

Depending on the type of vehicle, if the connector is disconnected before the ECU power is switched OFF the Check Engine Light may go on. (If the Light comes on: ⇒Refer to Page 8, "How to Turn Off the Check Engine Light")



※For details about connecting the specialized harness, please refer to the user's manual that came with that harness.

【Data】 Placement for Diagnostic Monitoring Connector



TOYOTA	①②③④⑦	MAZDA	②④⑩
NISSAN	①②③④⑤⑦	SUBARU	②③
HONDA	②④⑤⑥⑧⑨	SUZUKI	②④
MITSUBISHI	②③④⑤	DAIHATSU	②③④⑤
BMW · MINI	②③④⑤	VW · AUDI	②③④

①By the accelerator pedal
②At the right foot of the driver seat (with lid)
③At foot of driver seat in the center
④At the left foot of the driver seat (with lid)
⑤At the right side of the center console
⑥At the right foot of the passenger seat
⑦Behind the panel by the steering (with lid)
⑧At the left foot of the passenger seat
⑨At the left side of the center console
⑩Panel to right of steering wheel(upper part of small storage box)

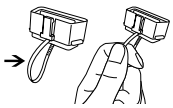
【Reference 1】 Notes about using the OBD Connector

⚠ CAUTION **Do not pull on the wires when trying to remove the connector; the wires may become disconnected.**

Make sure to grip the distended portions when pulling it out or inserting it.

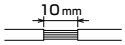
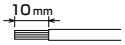
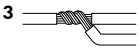
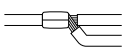
If you unable to get a grip on the distended portions.

With some car models it may be difficult to get a good grip on the connector.



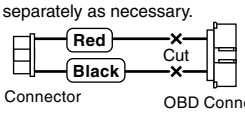
In such case, pull out the connector by pulling on the end of the zip tie.

【Reference】 How to use the Cut Connectors

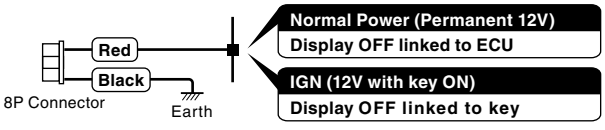
1  Peel off of the vinyl cover at connection.	2  Peel off of the vinyl cover at the end of the product' s wire.	3  Wrap around both wire coils.
4  Close tightly with cut connector.	5 Insulate with vinyl tape.	NOTE: When crimping, please use crimpers or use pliers to bend and then solder together.

If Power comes from Other Source / How to make display off linked to key

1 Cut the black and red wires coming from the OBD connector and wire separately as necessary.



2 Connect in accordance with the intended use. ■ = Use Cut Connector (included)



About Wiring for Reverse

By wiring to reverse, it is possible when in SPORTS Mode to automatically switch to NORMAL Mode when the gear is put into R (Reverse).

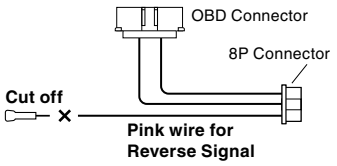
⚠ Usually there is no need to wire to reverse.

When put into reverse, the degree of acceleration is small and quick acceleration will not occur; it is not necessary to wire for reverse.

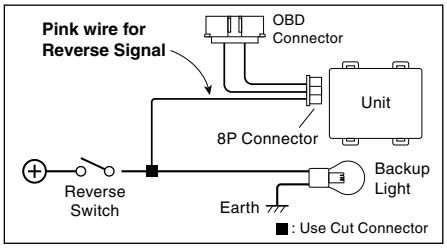
Wiring place: Reverse Signal	Check Wiring
When key is ON (engine not running) and in **R (Reverse) = 12V, Other Positions = 0V**	bAc — If in SPORTS Mode, when the reverse signal is input the display will read "bAc".

(Wiring Method)

Cut off the insulation tube from at the tip of the Pink wire for reverse signal. Connect with the following procedure.

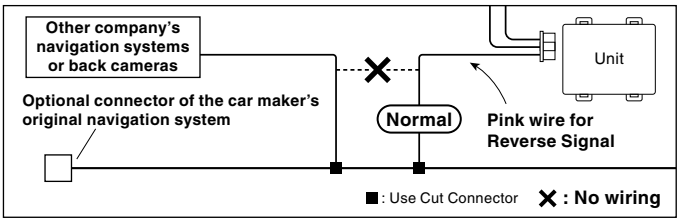


■ If wiring to the Reverse Signal



■ If wiring to the optional connector of the car maker's original navigation system

When using a different company's navigation system do not wire to the reverse cable.


Other company's navigation systems or back cameras
Optional connector of the car maker's original navigation system
Unit
Normal
Pink wire for Reverse Signal
■ : Use Cut Connector
✕ : No wiring

procedure 2 Installing The Products

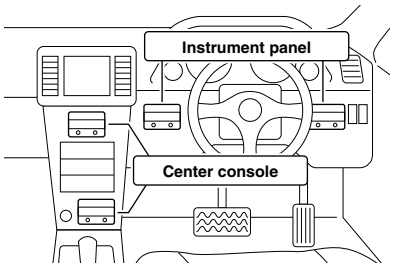
⚠ Please be sure to bundle away all wires with tape, etc...

While in use if wires become free they may interfere with driving and cause accidents. Also, wires which are smashed or crushed may result in a short and can be extremely dangerous.

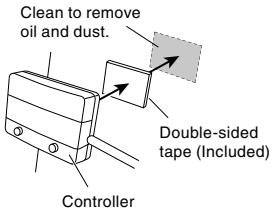
Installing The Controller

Install the Controller to a position which is easy to see and operate.

(Example of Installation)



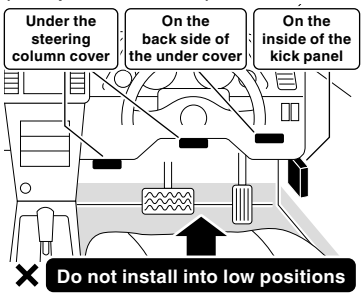
• Fastening to a Flat Place



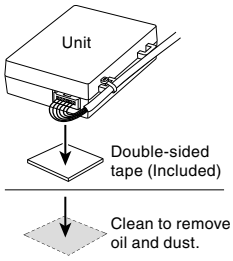
Installing The Unit

As shown in the diagram below, fasten the unit into positions not usually affected by water.

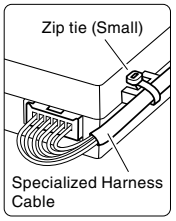
(Example of Installation)


Under the steering column cover
On the back side of the under cover
On the inside of the kick panel
✕ Do not install into low positions

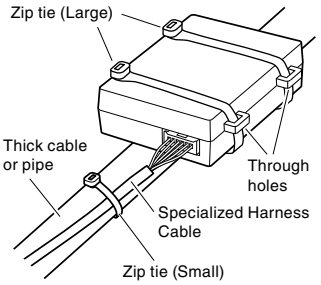
• Fastening to a Flat Place



Fasten down the cable without disconnecting the specialized harness connector.



• When Fastening to a Cable or Pipe



procedure 3

Initial Settings (Degree of Acceleration Setting)

Make sure to carry out these settings.

When installing for the first time → **Initial Settings**

When installing into a different car → **Initial Settings**

- **This operation sets the car's accelerator characteristics into the controller unit.**
- **If the "Initial Settings" are not carried out, the unit will remain in NORMAL Mode even if the Mode is switched.**
- **If this settings have been improperly made a Check Engine Light may go on.**

Before making the "Initial Settings"

⚠
1. **Make settings only after having completed all wiring (connector installation).**
2. **Make settings with the key in the ON position(engine not running) and the gear in P (Parking) or N (Neutral).**

【Making the Settings】

Operational Procedure	Controller Display Area
1 ▸ **Key ON.** (engine not running) ON or ENGINE START STOP. **Without braking, press down twice**	nor (nor Display). ⚠ If nor does not appear, press the MODE switch until nor appears.
2 ▸ **Press the SET switch until "0" is displayed.** **Press until "0" appears**	cAr ⇩ 5 4 ··· 1 0. Count down from 5 to 0 after the "cAr" blinking.
3 ▸ **When "0" appears release the SET switch.** **Release**	**(e.g.)**※1 L 1.5. Voltage Display (e.g. = L1.5)
4 ▸ **Pedal is not pressed down.** (Release the accelerator to 0%) 0%	**(e.g.)**※1 L 1.5. Voltage Display (e.g. = L1.5)
5 ▸ **Press the SET switch.** **Press** Set to 0%	SEt (SEt Display)
6 ▸ **Pedal is completely pressed down.** (Press in on the accelerator to 100%) 100%	**(e.g.)**※1 H 4.5. Voltage Display (e.g. = H4.5)

※1 The values shown in the display will vary depending on the type of car.

Operational Procedure	Controller Display Area
7 ▸ **With the accelerator at 100%, press the SET switch.** **Press** Set to 100%	SEt (SEt Display) ⇩ 100 (100 Display)
8 ▸ **Once the display changes to 100 release the accelerator.**	100 (100 Display) ⇩ nor (nor Display)

9 Setting Completed

If the device is re-installed into a different vehicle, make sure to carry out these settings again.

After having finished settings and the battery or wires have been disconnected it is not necessary to carry out "Initial Settings".

Check the Settings

※ If the display is incorrect start again from step 2 above.

Do not press in on pedal — 0% → nor (nor Display)

Press down on pedal — 100% → 100 (100 Display)

⚠ **If Err is displayed at 7**

If after the "Err" is shown the display returns to as shown in 4 ("L1.5" or so on), it means that the degree of acceleration settings have not been confirmed properly. Re-do the settings from step 4 .

How To Operate

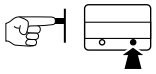
Switching the Mode and Change Ratio

It is possible to switch between NORMAL, ECO and SPORTS Modes, as well as, switch the change ratios respectively within ECO and SPORTS Modes.

In SPORTS Mode the larger the number the stronger the response will be and in ECO Mode the larger the number the weaker the response (less fuel consumption) will be.

1 **Key ON.**
(Engine Start)

2 **The mode will change with each pressing of the MODE switch.**

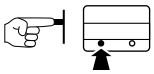


ECO Mode **NORMAL Mode** **SPORTS Mode**

Ec ⇄ nor ⇄ SP

※ For safety, when changing modes always go through nor (NORMAL) one time.

3 When Switching Modes **2** and Ec is displayed.



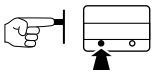
The ratio will change with each pressing of the SET switch.

Switching the Change Ratio for ECO Mode

Ec 1 → Ec 2 → Ec 3 → Ec 4 → Ec 5

Smallest Change Ratio (−10%) (−20%) (−30%) (−40%) Greatest Change Ratio (−50%)

When Switching Modes **2** and SP is displayed.



The ratio will change with each pressing of the SET switch.

Switching the Change Ratio for SPORTS Mode

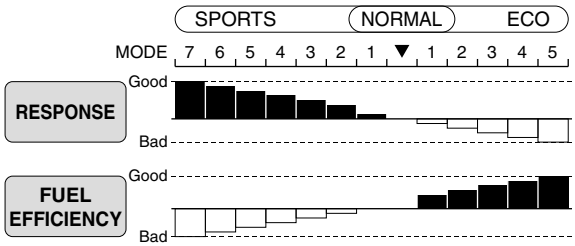
SP 1 → SP 2 → SP 3 ··· SP 7

Smallest Change Ratio (+10%) (+20%) (+30%) Greatest Change Ratio (+50%)

Even if the mode is switched the respective change ratio settings will not be changed.

For more details about the modes for when restarting the engine see Page 7 [Mode Settings for when Restarting the Engine].

Examples of changes in fuel consumption and response depending on change ratios



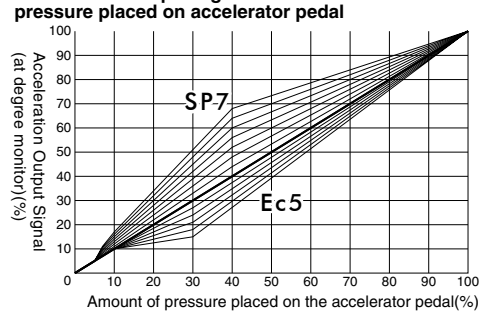
※ECO Mode increases fuel efficiency over normal conditions by suppressing rapid acceleration; if rapid acceleration is purposefully carried out fuel efficiency will be reduced.

※The changes in response will be greater as the vehicle's power is greater.

Basic Control Features

The changes within each mode will be controlled smoothly without perceptible steps.

Acceleration output signal based on amount of pressure placed on accelerator pedal

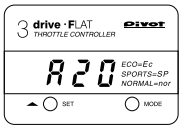


Degree of Acceleration Monitor

Displays the amount of pressure placed on the accelerator pedal. (output signal) [15 - 100%, 5% unit .]

- Degree of Acceleration Monitor shows the rate of acceleration output to the ECU where 0 represents the pedal not being pressed in and 100 equals when the pedal is fully pressed down.
- The display will show when degree is above 15%.

Degree of Acceleration (output) (20%)



USE 1 Check acceleration during ECO driving

To ensure reduced fuel consumption during acceleration the degree of acceleration should be between 15% and 25%. To further improve results use ECO Mode when wishing to save fuel.

USE 2 Check acceleration during regular driving

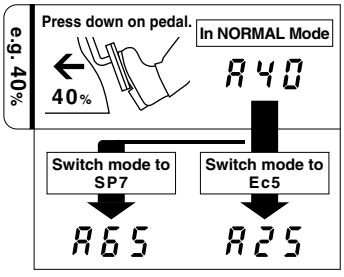
Please use to check the degree of acceleration for any type of driving, not just ECO Mode.

USE 3 Check control status

With the key in the ON position and under Normal Mode press in the pedal until it reaches 40% (A40), if the mode is changed to SP7 the display should read 65% (A65) and if placed in Ec5 the display should change to 25% (A25).

[See the above Graph of "Basic Control Features"]

※The actual display may differ slightly.



Mode Settings For When Restarting The Engine

Mode and change ratio at the restart

The mode at the start of the engine is selectable of "Previous use mode" or "Normal mode".

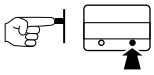
Lock — Loc — **Previous use mode of change ratio**

Normal — nor — **NORMAL Mode**

1 **Display SP mode**

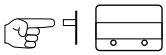
SPO

2 **Press the MODE switch for 5 seconds**



iGn Blinking for 3 seconds

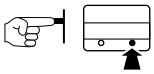
3 **Release the MODE switch when current setting is displayed**



(e.g.) nor Display current setting

(Factory Setting=NORMAL Mode)

4 **Changes by each pressing the MODE switch**



Loc ⇆ nor

(Lock) (Normal)

5 **With no operation for 5 seconds, the display will display current mode**

SPO **Setting Completed**

Troubleshooting

Trouble	Possible Causes	Possible Solutions
The key switch is set to ON but the display will not light up.	●Poor connection of OBD Connector. ●If wiring has been direct to power the red and black wires may have been improperly wired or there is a poor connection. ●Poor connection of Specialized Harness. ●The Specialized Harness being used is incorrect.	Please reconfirm whether wiring and connections are correct or not.
A Check Engine Light in vehicle has gone on.	**The accelerator connector** or **Specialized Harness** was disconnected with the key switch in the ON position or within 15 minutes after having turned the key to OFF.	Re-connect the disconnected connector and turn off the Light by following the directions "How to Turn Off the Check Engine Light" as bellow.
	With the key switch in the ON position disconnect the accelerator connector or the connector attached to the unit.	Turn off by following the directions "How to Turn Off the Check Engine Light" as bellow.
	The "Initial Settings" have not been properly carried out.	Make the settings by following the directions under procedure 3 "Initial Settings" found on Page 5 of this Manual, and follow the directions "How to Turn Off the Check Engine Light" as below to turn off the lamp.
While making "Initial Settings" an Err appears in the display.	The "Initial Settings" have not been properly carried out.	Make the settings by following the directions under procedure 3 "Initial Settings" found on page 5 of this Manual.
Even if the mode is changed, the changes cannot be felt.	The "Initial Settings" have not been properly carried out.	Make the settings by following the directions under procedure 3 "Initial Settings" found on page 5 of this Manual.
The engine seems to stall easily.	The change ratio under ECO Mode is too great.	Set the change ratio under ECO Mode to a smaller value.
Even when the display is turned off, the degree of acceleration temporarily appears.	This is a specification of the system.	This is normal and is not a malfunction.
The engine has been turned OFF but the display remain on.	This product is interlocked with the ECU (engine computer) power. Depending on the model of car, the display may remain on for up to 15 minutes even after the engine has been turned off; this is normal.	
When put into reverse the display does not show bAc while in SPORTS Mode.	The **Pink** wire may have been improperly wired or there is a poor connection.	Please reconfirm whether wiring and connections are correct or not.
	The unit is connected to the reverse wire of a navigation system from another company.	Carry out Wiring to Reverse (⇒ page 4 of this manual).

Note

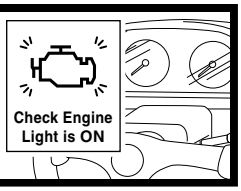
How to Turn Off the Check Engine Light.

If the Check Engine Light comes on due to some operational mistake, please follow the directions below to turn it off.

①Under normal conditions, start and stop the engine several times.

②If that does not turn off the lamp, disconnect the cable from ⊖ terminal of the battery for about 10 minutes.

③If that does not turn off the lamp, please consult your local car dealer and have them turn it off.



※Our products have already been recognized as our Industrial Property or are in the process of receiving Industrial Property status.
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